Powersports and Outdoor Power Equipment

Evaluation Form

2025 Curricular Materials Review

# Publisher information

* Publisher Name:
* Title:
* ISBN #:
* Author:
* Copyright:
* Most Recently Published Edition and Website:
* Materials provided for evaluation:
* Intended Teacher Audience(s):
* Intended Student Audience(s):
* Is this curriculum in a digital format, print format, or both?

# Instruction

## Publishing Company

* Complete the curriculum evaluation form below. Please provide written justification as to how the material meets the criterion along with location references. If a justification requires additional space, please submit a response on an additional document.

## Review Team Member:

* Please use information and attachments to complete the curriculum evaluation form.
* Explain any discrepancies between your findings and the provided information.
* Findings, explanations, and comments should directly reflect the rubric.

Scoring for Alignment to Program Standards:

To evaluate each course’s materials for alignment to [**Powersports and Outdoor Power Equipment**](https://cte.idaho.gov/wp-content/uploads/2024/04/powersports-and-outdoor-power-equipment-standards-2024-draft.pdf), analyze the materials against the relevant criteria in the tables below. Instructional materials must meet most criteria and metrics to align with program standards.

| 0 Points  No Alignment | 1 Point  Partial Alignment | 2 Points  High Alignment | NA  Not Applicable |
| --- | --- | --- | --- |
| Standard for Powersports and Outdoor Power Equipment is not evident. | There is some evidence of the Standard for Powersports and Outdoor Power Equipment. | Materials explicitly align to and support the Standard for Powersports and Outdoor Power Equipment through regular and authentic engagement opportunities for students. |  |

# CONTENT STANDARD CTE POPE.1.0: Professional Organizations and Leadership

### Performance Standard CTE POPE.1.1 Student Leadership in Career Technical Student Organizations (CTSO) and Professional Associations

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.1.1.1 Explore the role of professional organizations and/or associations in the powersports and outdoor power equipment industry. | 0 1 2 N/A |  |
| 1. CTE POPE.1.1.2 Define the value, role, and opportunities provided through career technical student organizations. | 0 1 2 N/A |  |
| 1. CTE POPE.1.1.3 Engage in career exploration and leadership development. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.2.0: basic safety

### Performance Standard CTE POPE.2.1 Workplace Safety

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.2.1.1 Describe general shop safety rules and procedures. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.2 Describe common shop hazards and housekeeping duties. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.3 Handle tools and equipment, observing manufacturer guidelines and safety features. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.4 Demonstrate safe lifting procedures, lift operation, and use of support equipment (e.g., jacks and jack stand placements, lifts, cribbing, hoists, rigging). | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.5 Check for proper ventilation to meet work requirements and procedures within the lab/shop area. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.6 Identify marked safety areas. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.7 Identify the location and the types of fire extinguishers and other fire safety equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.8 Demonstrate procedures for using fire extinguishers and other fire safety equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.9 Identify the location and use of eye wash stations and first aid kits. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.10 Describe the location of and the necessity for posted evacuation routes. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.11 Wear required safety glasses, ear protection, gloves, and shoes during lab/shop activities. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.12 Wear appropriate clothing for lab/shop activities. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.13 Secure hair and jewelry for lab/shop activities. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.14 Describe the information on safety data sheets (SDS) and how to access them. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.15 Handle, store, and dispose of hazardous and flammable waste and materials. | 0 1 2 N/A |  |
| 1. CTE POPE.2.1.16 Describe the requirements for reporting workplace safety incidents. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.3.0: TOOLS, EQUIPMENT, AND FASTENERS

### Performance Standard CTE POPE.3.1 Tools and Equipment

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.3.1.1 Identify basic hand tools and their functions. | 0 1 2 N/A |  |
| 1. CTE POPE.3.1.2 Identify standard and metric tool designations. | 0 1 2 N/A |  |
| 1. CTE POPE.3.1.3 Clean, store, and maintain hand tools. | 0 1 2 N/A |  |
| 1. CTE POPE.3.1.4 Identify handheld power tools (e.g., pneumatic, electric) and their functions. | 0 1 2 N/A |  |
| 1. CTE POPE.3.1.5 Identify shop equipment (e.g., oxy-acetylene torch, arc welding equipment, bench grinder, hydraulic press, parts washers, pressure washers) and their functions. | 0 1 2 N/A |  |
| 1. CTE POPE.3.1.6 Clean, store, and maintain power tools. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.3.2 Precision Measuring Instruments

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.3.2.1 Define measuring terminology (i.e., units of measurement). | 0 1 2 N/A |  |
| 1. CTE POPE.3.2.2 Identify measuring instruments (e.g., micrometers, dial calipers, dial gauges, feeler gauge, torque wrench) and their functions. | 0 1 2 N/A |  |
| 1. CTE POPE.3.2.3 Describe the procedures for yielding accurate readings. | 0 1 2 N/A |  |
| 1. CTE POPE.3.2.4 Store and maintain precision measuring tools. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.3.3 Fasteners

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.3.3.1 Identify types of fasteners and their dimensions. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.2 Identify thread pitch on fasteners using the thread pitch tool. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.3 Record bolt grade and tensile strength. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.4 Re-thread tapped holes. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.5 Re-thread damaged fasteners. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.6 Remove seized fasteners. | 0 1 2 N/A |  |
| 1. CTE POPE.3.3.7 Describe the application and installation of thread inserts (e.g., heli-coil, time-sert). | 0 1 2 N/A |  |
| 1. CTE POPE.3.2.8 Demonstrate fastener torque patterns and procedures. | 0 1 2 N/A |  |
| 1. CTE POPE.3.2.9 Demonstrate fastener retention procedures (e.g., Loctite, lock washers, lock nuts, retainers. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.4.0: identification

### Performance Standard CTE POPE.4.1 Unit, Equipment, and Component Identification

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.4.1.1 Locate equipment VIN, HIN, serial number, production data code, model number, and spec number. | 0 1 2 N/A |  |
| 1. CTE POPE.4.1.2 Identify additional equipment (e.g., tires, emissions, engines, transmissions) information labels. | 0 1 2 N/A |  |
| 1. CTE POPE.4.1.3 Access service and parts identification resources (e.g., service manuals, parts diagrams). | 0 1 2 N/A |  |
| 1. CTE POPE.4.1.4 Identify power and fuel sources (e.g., battery, diesel, gas, propane) and associated hazards. | 0 1 2 N/A |  |
| 1. CTE POPE.4.1.5 Describe the safe operation and use of powersports and outdoor power equipment (e.g., handheld equipment, powersports vehicles, marine applications, lawn care equipment). | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.5.0: ENGINE REPAIR, LUBRICATION, AND COOLING

### Performance Standard CTE POPE.5.1 Engine Principles and Design

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.5.1.1 Describe the theory of operation and functions of two-stroke and four-stroke engines and their relative advantages and disadvantages. | 0 1 2 N/A |  |
| 1. CTE POPE.5.1.2 Describe how engines are rated (e.g., displacement, horsepower, torque). | 0 1 2 N/A |  |
| 1. CTE POPE.5.1.3 Describe the engine configurations found on powersports and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.5.1.4 Identify the component parts used in a four-stroke engine. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.5.2 Lubrication and Cooling Systems

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.5.2.1 Define the four key purposes of lubrication. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.2 Describe the types of oil and how oil is classified. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.3 Describe the lubrication systems used in two-stroke and four-stroke engines. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.4 Perform engine oil and filter change using proper fluid type per manufacturer specification. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.5 Describe the function of cooling systems and their operation. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.6 Describe the types of coolants and how coolants are classified. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.7 Describe the cooling systems (e.g., air, oil, water) and components used on powersports, marine, and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.8 Perform a cooling system pressure test. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.9 Identify causes of engine overheating. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.10 Inspect and/or test coolant. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.11 Drain and recover coolant, flush and refill the cooling system, use the proper fluid type per manufacturer specification, and blow air as required. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.12 Describe the operation of marine cooling system components (e.g., circulation and raw water pumps, thermostats, heat exchangers). | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.13 Inspect the radiator for damage and proper function. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.14 Remove, inspect, and replace the thermostat and gasket/seal. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.15 Inspect and test the electrical or mechanical fan, fan shroud, and air dams, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.16 Inspect auxiliary coolers, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.2.17 Inspect and test cooling system electrical components (e.g., temperature sensor, fan switch, oil temperature sensor). | 0 1 2 N/A |  |

### Performance Standard CTE POPE.5.3 Two-Stroke and Four-Stroke Engine Inspection and Repair

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.5.3.1 Access and interpret vehicle service information. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.2 Verify customer complaints (e.g., lack of power, hard starting, oil leak, oil consumption, overheating) to determine the course of action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.3 Inspect engine assembly for fuel, oil, coolant, and other leaks, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.4 Inspect the bearings, bushings, and seals used in an engine. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.5 Verify engine mechanical timing. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.6 Inspect engine mounts and alignment procedures. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.7 Remove, disassemble, and inspect the cylinder head according to the manufacturer's specifications and procedures. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.8 Inspect and adjust valve train components according to manufacturer’s specifications. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.9 Inspect and measure cylinder walls/sleeves for damage, wear, and ridges, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.10 Inspect and measure piston skirts and ring lands, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.11 Identify piston-to-bore clearance. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.12 Inspect, measure, and install piston rings. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.13 Disassemble and inspect the engine block, cleaning and preparing components for reassembly. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.14 Inspect and measure the crankshaft, connecting rods, and bearings for reuse according to the manufacturer’s specifications. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.15 Inspect the auxiliary shaft and support bearings (e.g., balance shaft, intermediate shaft, idler shaft, counterbalance shaft/gear) for damage and wear. | 0 1 2 N/A |  |
| 1. CTE POPE.5.3.16 Reassemble the complete engine according to the manufacturer’s specifications. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.6.0: ELECTRICAL/ELECTRONIC SYSTEMS

### Performance Standard CTE POPE.6.1 Electricity Fundamentals

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.6.1.1 Describe the importance of safety procedures when working with electrical systems. | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.2 List electrical circuits' types and basic components (e.g., source, conductor, load, protection devices, switches). | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.3 Define the terms voltage, current, and resistance. | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.4 Describe the principles of magnetism and magnetic fields. | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.5 Calculate voltage, current, and resistance for series and parallel circuits using Ohm's law. | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.6 Identify electrical and electronic components (e.g., conductors, fuses, circuit breakers, resistors, diodes). | 0 1 2 N/A |  |
| 1. CTE POPE.6.1.7 Describe schematics, their purpose, and how to read a wiring diagram. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.6.2 Battery Charging and Starting

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.6.2.1 Describe the various types of batteries used in powersports, marine, and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.2 Verify battery capacity for the vehicle application by performing state of charge and battery capacity and load tests and determining the needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.3 Service battery (i.e., fill battery cells, check battery cables, connectors, clamps, hold-downs, charge battery), according to manufacturer’s recommendations. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.4 Jump-start vehicle, using jumper cables and a booster battery or an auxiliary power supply. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.5 Describe the theory of charging systems and types of charging systems (e.g., permanent magnet, electromagnet). | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.6 Identify the components in a charging system (e.g., source, alternator, regulator, rectifier) and their functions. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.7 Perform a charging system output test to determine the needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.8 Diagnose (troubleshoot) the charging system for undercharge, no-charge, or overcharge conditions. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.9 Remove, inspect, and/or replace the alternator. | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.10 Identify the components of manual start systems (e.g., kick start, pull start, crank start). | 0 1 2 N/A |  |
| 1. CTE POPE.6.2.11 Describe the components and operation of an electric start system. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.6.3 Electrical/Electronic Systems Diagnosis and Repair

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.6.3.1 Determine and verify proper operation of system/circuit according to manufacturer’s specifications. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.2 Measure source voltage, voltage drop, current flow, and resistance using a multimeter. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.3 Describe shorts, grounds, opens, and resistance problems in electrical/electronic circuits. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.4 Test an electrical circuit using a test light. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.5 Perform starter current draw tests, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.6 Compare electrical and engine mechanical problems resulting in slow or no-crank conditions. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.7 Check the operation of electrical circuits using fused jumper wires. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.8 Diagnose (troubleshoot) electrical/electronic circuit problems using wiring diagrams. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.9 Diagnose the cause(s) of excessive key-off battery drain (e.g., parasitic draw) and determine the needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.10 Inspect and test fusible links, circuit breakers, and fuses, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.11 Inspect, test, repair, and/or replace components, connectors, terminals, harnesses, switches, and wiring in electrical/electronic systems, including necessary solder repairs. | 0 1 2 N/A |  |
| 1. CTE POPE.6.3.12 Inspect and test gauges and gauge sending units (e.g., speedometers, fuel gauges, voltmeter) for causes of abnormal readings, determining needed action. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.7.0: FUEL, IGNITION, AND ENGINE MANAGEMENT SYSTEMS

### Performance Standard CTE POPE.7.1 Fuel Systems

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.7.1.1 Describe fuel requirements by type (e.g., octane ratings and factors that affect these ratings, additives, and ethanol percentage). | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.2 Describe the operation of a fuel system. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.3 Describe the theory and operation of a carburetor and its circuits. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.4 Identify components/circuits of a carbureted fuel system. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.5 Perform carburetor repair and adjustment. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.6 Describe the theory and operation of electronic fuel injection. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.7 Identify the components of electronic fuel injection. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.8 Inspect and test the fuel pump(s) and pump control system for pressure, regulation, and volume, determining what action is needed. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.9 Replace fuel filter(s) where applicable. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.10 Inspect, service, or replace air filters, filter housings, and intake ductwork | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.11 Inspect the throttle body, air induction system, intake manifold, and gaskets for vacuum leaks and/or unmetered air. | 0 1 2 N/A |  |
| 1. CTE POPE.7.1.12 Inspect, test, service, and/or replace the positive crankcase ventilation (PCV) filter/breather, valve, tubes, orifices, and hoses, determining the needed action. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.7.2 Ignition Systems

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.7.2.1 Describe the common components found in all types of ignition systems. | 0 1 2 N/A |  |
| 1. CTE POPE.7.2.2 Describe the operation of battery-powered, magneto-powered, and electronic ignition systems. | 0 1 2 N/A |  |
| 1. CTE POPE.7.2.3 Diagnose (troubleshoot) ignition system-related problems such as no-starting, hard starting, engine misfire, poor drivability, spark knock, power loss, poor mileage, and emissions concerns, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.7.2.4 Remove and replace spark plugs, inspecting secondary ignition components for wear and damage. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.7.3 Exhaust, Emissions and Computer Controls

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.7.3.1 Describe the functions of exhaust system components. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.2 Describe procedures for inspecting and servicing exhaust systems. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.3 Describe the function of a turbocharger. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.4 Describe the different types of emission control systems (e.g., catalytic converter). | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.5 Identify the types of pollutants that engines create. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.6 Describe the various sensors and components used in computer-controlled engines. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.7 Interpret diagnostic trouble codes (DTC). | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.8 Access service information to perform step-by-step (troubleshooting) diagnosis. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.9 Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.7.3.10 Describe the operation of turbocharger/supercharger systems. | 0 1 2 N/A |  |

# CONTENT STANDARD CTE POPE.8.0: DRIVES, CLUTCHES, AXLES, AND TRANSMISSION SYSTEMS

### Performance Standard CTE POPE.8.1 Drives, Clutches, Axles, and Transmissions Components and Repair

| Student Competencies by Performance Standard | Meets Criteria | Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions in addition to page numbers. |
| --- | --- | --- |
| 1. CTE POPE.8.1.1 Identify the components and their functions within the primary drive system of powersports, marine, and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.2 Describe the types of clutches used in powersports and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.3 Describe the types of final drive systems. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.4 Identify the major parts of a primary drive, transmission, and final drive assembly. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.5 Describe the operating principles of a primary drive, clutch, transmission, and final drive. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.6 Trace power flow through a primary drive, transmission, and final drive. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.7 Check fluid level in a transmission equipped with/without a dip-stick. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.8 Inspect and adjust external shift linkage/cable and transmission range sensor/switch (e.g., neutral, park, gear position sensor). | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.9 Inspect for leakage, replacing external seals, gaskets, and bushings as needed. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.10 Drain and replace fluid and filter(s), using proper fluid type, per manufacturer specification. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.11 Inspect powertrain mounts. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.12 Describe the operational characteristics of a continuously variable transmission (CVT). | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.13 Drain and refill manual transmission/transaxle and final drive unit, using proper fluid type, per manufacturer specification. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.14 Diagnose clutch noise, binding, slippage, pulsation, and chatter, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.15 Inspect clutch linkage, cables, automatic adjuster mechanisms, brackets, bushings, pivots, and springs, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.16 Inspect and/or replace clutch pressure plate assembly, clutch disc, release (throw-out) bearing, and linkage. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.17 Check for leaks, adjust, and bleed clutch master cylinder, refilling with proper fluid type, per manufacturer specification, as needed. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.18 Diagnose constant-velocity (CV) and universal joint noise and vibration concerns, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.19 Check and adjust differential case fluid level, checking for leaks, inspecting housing vent, and using proper fluid type, per manufacturer specification. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.20 Drain and refill differential case, using proper fluid type, per manufacturer specification. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.21 Inspect and replace drive axle wheel studs. | 0 1 2 N/A |  |
| 1. CTE POPE.8.1.22 Remove and replace drive axle shafts. | 0 1 2 N/A |  |

### CONTENT STANDARD CTE POPE.9.0: WHEELS, TIRES, AND BRAKE SYSTEMS

### Performance Standard CTE POPE.9.1 Wheels and Tires

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.9.1.1 Describe the operating principles of mechanical, electrical, and hydraulic brake systems. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.2 Identify the brake system components used on powersports vehicles. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.3 Describe ABS and linked systems. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.4 Describe the types of wheels used on modern powersports vehicles. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.5 Identify the types of tire construction used on powersports and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.6 Inspect tire condition; identify tire wear patterns; check for the correct tire size, application (e.g., load ratings, speed ratings), and air pressure, as listed on the tire information placard/label. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.7 Diagnose wheel/tire vibration, shimmy, air loss, pull, and noise, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.8 Rotate tires according to the manufacturer’s recommendation. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.9 Measure wheel, tire, axle flange, and hub runout, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.10 Dismount, inspect, and remount the tire on the wheel, balancing wheel, and tire assembly. | 0 1 2 N/A |  |
| 1. CTE POPE.9.1.11 Install wheel and torque lug nuts. | 0 1 2 N/A |  |

### Performance Standard CTE POPE.9.2 Brake Systems

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.9.2.1 Describe the operating principles of mechanical, electrical, and hydraulic brake systems. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.2 Identify the brake system components used on powersports vehicles. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.3 Describe ABS and linked systems. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.4 Describe the types of wheels used on modern powersports vehicles. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.5 Identify the types of tire construction used on powersports and outdoor power equipment. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.6 Inspect tire condition; identify tire wear patterns; check for the correct tire size, application (e.g., load ratings, speed ratings), and air pressure, as listed on the tire information placard/label. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.7 Diagnose wheel/tire vibration, shimmy, air loss, pull, and noise, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.8 Rotate tires according to the manufacturer’s recommendation. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.9 Measure wheel, tire, axle flange, and hub runout, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.10 Dismount, inspect, and remount the tire on the wheel, balancing wheel, and tire assembly. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.11 Install wheel and torque lug nuts. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.12 Clean and inspect the rotor and mounting surface, measuring the rotor thickness, thickness variation, and lateral runout and determining the needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.13 Remove and reinstall/replace the rotor. | 0 1 2 N/A |  |
| 1. CTE POPE.9.2.14 Describe the importance of operating the vehicle to burnish/break-in replacement brake pads, per the manufacturer’s recommendations. | 0 1 2 N/A |  |

### CONTENT STANDARD CTE POPE.10.0: CHASSIS, SUSPENSION, AND STEERING SYSTEMS

### Performance Standard CTE POPE.10.1 Chassis, Suspension, and Steering Components and Repair

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.10.1.1 Describe the types, functions, and components of front and rear suspension systems. | 0 1 2 N/A |  |
| 1. CTE POPE.10.1.2 Inspect suspension components for leaks, determining needed action. | 0 1 2 N/A |  |
| 1. CTE POPE.10.1.3 Inspect chassis bearings (e.g., steering head, swing arm, wheel) for wear and play. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.4 Describe the procedures for rebuilding a front fork assembly and shock absorber. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.5 Interpret suspension and steering system concerns (e.g., ride height, sway, noises) to determine the needed action. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.6 Inspect upper and lower control arms, bushings, shafts, and rebound bumpers. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.7 Inspect upper and/or lower ball joints with or without wear indicators. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.8 Inspect steering knuckle assemblies. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.9 Inspect, remove, and/or replace shock absorbers, inspecting mounts and bushings. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.10 Remove, inspect, service, and/or replace front and rear wheel bearings. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.11 Inspect steering alignment per manufacturer’s specification. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.12 Describe the effects of camber, caster, and toe on handling, performance, and ride quality. | 0 1 2 N/A |  |
| 1. CTE POPE 10.1.13 Inspect steering systems and components (e.g., electric assist, hydraulic assist, hydrostatic, cable, rack, and pinion). | 0 1 2 N/A |  |

### CONTENT STANDARD CTE POPE.11.0: HYDRAULIC SYSTEMS

### Performance Standard CTE POPE.11.1 Hydraulics Components and Repair

| Student Competencies by Performance Standard | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. CTE POPE.11.1.1 Describe fundamental features and principles of hydraulics using hydraulics terminology. | 0 1 2 N/A |  |
| 1. CTE POPE.11.1.2 Identify safety concerns and procedures specific to hydraulic systems. | 0 1 2 N/A |  |
| 1. CTE POPE.11.1.3 Describe the function of the primary hydraulic system components. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.4 Describe open-center and closed-center hydraulic systems and their operating principles. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.5 Describe the types and functions of hydraulic fluid. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.6 Describe the types and functions of hydraulic reservoirs and cooling systems. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.7 Describe the types of hydraulic pumps and their principles of operation. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.8 Describe the types and functions of hydraulic control valves and valve actuating systems. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.9 Describe the types and functions of hydraulic actuators. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.10 Describe the types and applications of hydraulic fittings, hoses, and lines. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.11 Interpret hydraulic symbols from a hydraulic schematic. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.12 Compare a hydraulic drive system and a hydrostatic drive system. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.13 Calculate hydraulic cylinder force and cycle times based on pump pressure and flow using Pascal’s law. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.14 Disassemble, inspect and repair hydraulic control valves. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.15 Disassemble, inspect and repair hydraulic pumps. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.16 Disassemble, inspect and repair hydraulic actuators. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.17 Describe the operation of a hydrostatic transmission. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.18 Replace hydraulic hose, line, and seal. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.19 Perform hydraulic system pressure and flow tests. | 0 1 2 N/A |  |
| 1. CTE POPE 11.1.20 Diagnose and suggest solutions for hydraulic system problems. | 0 1 2 N/A |  |

Scoring for Best Practices and Assessment

| 0 Points  No Alignment | 1 Point  Partial Alignment | 2 Points  High Alignment | NA  Not Applicable |
| --- | --- | --- | --- |
| There is no evidence of the teaching practice. | The teaching practice is embedded in some lessons. | Materials regularly embed supports for teachers to implement best practices and assessment. |  |

Scoring for Alignment to Best Practices and Assessment:

| Best Practices and Assessments | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. Materials contain clear statements and explanations of purpose, goals, and learning outcomes. | 0 1 2 N/A |  |
| 1. Materials are systematic and sequential – prerequisite skills taught first and vertically aligned appropriately. | 0 1 2 N/A |  |
| 1. Materials include formative and summative assessments and/or test data banks that allow the instructor to edit materials when appropriate. | 0 1 2 N/A |  |
| 1. Digital materials and assessments are easy to edit and revise and access to distribute and/or print. | 0 1 2 N/A |  |

Scoring for Additional Indicators of Quality Materials

| 0 Points  No Alignment | 1 Point  Partial Alignment | 2 Points  High Alignment | NA  Not Applicable |
| --- | --- | --- | --- |
| There is no evidence of differentiation elements or engaging tools. | There is some evidence of differentiation elements or engaging tools. | Materials include differentiation elements as well as engaging tools. |  |

Scoring for Alignment to Additional Indicators of Quality Materials:

| Indicators of Quality Materials | Meets Criteria | Justification or Comments |
| --- | --- | --- |
| 1. Materials provide instructional strategies to accommodate the learning differences of all students. | 0 1 2 N/A |  |
| 1. Materials are available in language(s) other than English. | 0 1 2 N/A |  |
| 1. The material has an aesthetically appealing appearance. | 0 1 2 N/A |  |
| 1. Digital and print materials are consistently formatted, visually focused, and uncluttered for efficient use. | 0 1 2 N/A |  |
| 1. The illustrations clearly cross-reference the text, are directly relevant to the content (not simply decorative), and promote thinking, discussion, and problem solving. | 0 1 2 N/A |  |

Scoring for Best Practices in the Use of Technology

| 0 Points  No Alignment | 1 Point  Partial Alignment | 2 Points  High Alignment | NA  Not Applicable |
| --- | --- | --- | --- |
| There is no evidence of best practices in using technology. | There is some evidence of best practices in using technology. | Materials include best practices in using technology. |  |

Use of Technology

| **Use of Technology** | **Justification: Provide examples from materials as evidence to support each response for this section. Provide descriptions, not just page numbers.** |
| --- | --- |
| 1. Technology and digital media support, extend, and enhance learning experiences. |  |
| 1. The material has “platform neutral” technology (i.e., cloud based) and availability for networking. |  |
| 1. The material has a user-friendly and interactive interface allowing the user to control (shift among activities). |  |

For Questions Contact

Content & Curriculum – Curricular Materials

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